

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A soil producing method for producing second soil containing organic halides with a second concentration lower than a first concentration from first soil containing the organic halides with the first concentration, comprising the steps of:

introducing the first soil to a hermetic zone;

pumping out the hermetic zone to a vacuum state using at least a vacuum pump; ~~and~~

thermally decomposing at least a part of the organic halides by heating the first soil in the hermetic zone under the vacuum state; and

heating under a vacuum state a gaseous substance produced by the thermal decomposition of the organic halides.

Claim 2 (Original): The soil producing method as set forth in claim 1, wherein the organic halides are dioxins.

Claim 3 (Previously Presented): The soil producing method as set forth in claim 1, further comprising the step of:

reducing the concentration of halogen contained in gases produced by the thermal decomposition of the soil.

Claim 4 (Original): The soil producing method as set forth in claim 1, wherein a thermally decomposed residue of the first soil is cooled after the hermetic zone is purged by a purge gas which is substantially organic halide-free and not capable of generating organic halides.

Claim 5 (Previously Presented): The soil producing method as set forth in claim 4, wherein the purge gas contains at least one element selected from a group consisting of helium, neon, argon, krypton, xenon, nitrogen, and hydrogen.

Claim 6 (Original): The soil producing method as set forth in claim 1, wherein the thermally decomposing step is performed in the hermetic zone where an oxygen concentration is controlled.

Claim 7 (Previously Presented): A soil producing method for producing second soil containing organic halides with a second concentration lower than a first concentration from first soil containing the organic halides with the first concentration, comprising the steps of:
heating the first soil so that at least a part of the organic halides are evaporated or decomposed under a vacuum state formed using at least a vacuum pump;
introducing a heated residue of the soil to a hermetic zone; and
cooling the heated residue of the first soil after the hermetic zone is purged by a purge gas which is substantially organic halide-free and not capable of generating organic halides..

Claim 8 (Original): The soil producing method as set forth in claim 7, wherein the organic halides are dioxins.

Claim 9 (Original): The soil producing method as set forth in claim 7, wherein the purge gas contains at least one element selected from a group consisting of helium, neon, argon, krypton, xenon, nitrogen, and hydrogen.

Claim 10 (Original): The soil producing method as set forth in claim 7, further comprising the step of:

reducing a concentration of halogen contained in gases produced by heating the first soil.

Claim 11 (Currently Amended): A soil producing method,
wherein the soil containing organic halides is thermally decomposed under a vacuum state formed using at least a vacuum pump, and

wherein a gaseous substance produced by the thermal decomposition is heated under a vacuum state.

Claim 12 (Original): The soil producing method as set forth in claim 11,
wherein the concentration of halogen contained in gases produced by the thermal decomposition of soil is reduced.

Claim 13 (Previously Presented): A soil treatment apparatus for treating soil containing organic halides or being capable of generating organic halides by heating, comprising:

means for heating the soil;

a hermetic zone;

means for introducing a heated residue of the soil from the means for heating the soil to the hermetic zone;

means for purging the hermetic zone by a purge gas which is substantially organic halide-free; and

means for cooling the heated residue.

Claim 14 (Original): The soil treatment apparatus as set forth in claim 13,
wherein the heating means is a combustion furnace for performing combustion
treatment for the soil.

Claim 15 (Original): The soil treatment apparatus as set forth in claim 13,
wherein the heating means is a thermal decomposition furnace for performing thermal
decomposition treatment for the soil.

Claim 16 (Original): The soil treatment apparatus as set forth in claim 13,
wherein the heating means is a reduced pressure thermal decomposition furnace for
performing thermal decomposition treatment for the soil under reduced pressure.

Claim 17 (Original): The soil treatment apparatus as set forth in claim 13,
wherein the purging means introduces the purge gas after the pressure in the hermetic
zone is reduced.

Claim 18 (Original): The soil treatment apparatus as set forth in claim 17,
wherein the organic halides are dioxins.

Claim 19 (Original): The soil treatment apparatus as set forth in claim 17,
wherein the purge gas contains at least one element selected from a group consisting
of helium, neon, argon, krypton, xenon, nitrogen, and hydrogen.

Claim 20 (Original): The soil treatment apparatus as set forth in claim 13, further comprising:

halogen trapping means having a metal for forming chemical compounds with halogen contained in gases produced by the heating of the soil or an adsorbent for adsorbing the halogen in the produced gases.

Claim 21 (Previously Presented): The soil treatment apparatus as set forth in claim 13, further comprising:

reforming means for reforming gases produced by the heating of the soil at a first temperature at which dioxins are decomposed; and

cooling means for cooling the produced gases to a second temperature so that an increase in the concentration of dioxins in the gases is suppressed.

Claim 22 (Currently Amended): A treatment method,
wherein an object to be treated containing organic halides is thermally decomposed under a vacuum state formed using at least a vacuum pump, and
wherein a gaseous substance produced by the thermal decomposition is heated under a vacuum state.

Claim 23 (Previously Presented): A treatment apparatus for treating an object to be treated containing organic halides or being capable of generating organic halides by heating, comprising:

means for heating the object;

a hermetic zone;

means for introducing a heated residue to the hermetic zone;

means for purging the hermetic zone by a purge gas which is substantially organic halide-free; and

means for cooling the heated residue.

Claim 24 (Original): The soil treatment apparatus as set forth in claim 23, wherein the heating means is a combustion furnace for combusting the object.

Claim 25 (Original): The soil treatment apparatus as set forth in claim 23, wherein the heating means is a thermal decomposition furnace for thermally decomposing the object.

Claim 26 (Original): The soil treatment apparatus as set forth in claim 23, wherein the heating means is a reduced pressure thermal decomposition furnace for thermally decomposing the object to be treated under reduced pressure.

Claim 27 (Original): The soil treatment apparatus as set forth in claim 23, wherein the purging means introduces the purge gas after the pressure in the hermetic zone is reduced.

Claim 28 (Original): The soil treatment apparatus as set forth in claim 23, wherein the organic halides are dioxins.

Claim 29 (Original): The soil treatment apparatus as set forth in claim 27, wherein the purge gas contains at least one element selected from a group consisting of helium, neon, argon, krypton, xenon, nitrogen, and hydrogen.

Claim 30 (Original): The soil treatment apparatus as set forth in claim 23, further comprising:

halogen trapping means in which metal for forming compounds with halogen contained in gases produced by the heating of the object or an adsorbent for adsorbing the halogen in the produced gases is placed.

Claim 31 (Previously Presented): The soil treatment apparatus as set forth in claim 23, further comprising:

reforming means for reforming gases produced by the heating of the object at a first temperature at which dioxins are decomposed; and

cooling means for cooling the produced gases to a second temperature so that an increase in the concentration of dioxins in the gases is suppressed.

Claim 32 (Currently Amended): A treatment method,

wherein an object to be treated is passed through a furnace allowing the control of thermal decomposition temperature or through a plurality of reduced pressure furnaces different in thermal decomposition temperature when being subjected to thermal decomposition treatment under a vacuum state formed using at least a vacuum pump, and

wherein a gaseous substance produced by the thermal decomposition treatment is heated under a vacuum state.

Claim 33 (Currently Amended): A treatment method,

wherein a furnace allowing the control of thermal decomposition temperature at which an object to be treated is subjected to thermal decomposition treatment is provided, the

pressure in the furnace is changed from normal pressure to a vacuum state formed using at least a vacuum pump, and

wherein a gaseous substance produced by the thermal decomposition treatment is heated under a vacuum state.

Claim 34 (Original): A treatment apparatus,
wherein a normal pressure furnace and a plurality of reduced pressure furnaces each for subjecting an object to be treated to thermal decomposition treatment are continuously provided, and the thermal decomposition temperature in each of the furnaces is set so as to increase with progress to a later stage.

Claim 35 (Previously Presented): The treatment apparatus as set forth in claim 34, further comprising:

halogen trapping means placed to connect with the reduced pressure furnaces and holding metal for forming compounds with halogen contained in gases produced by the thermal decomposition of the object to be treated or an adsorbent for adsorbing the halogen in the produced gases therein.

Claim 36 (Currently Amended): A treatment method,
wherein a heated residue containing residual dioxins generated from waste disposal facilities and factories, is treated while being heated under a vacuum state formed using at least a vacuum pump, and

wherein a gaseous substance produced by the treatment of the heated residue is heated under a vacuum state.

Claim 37 (Previously Presented): A soil treatment apparatus for treating soil containing organic halides or being capable of generating organic halides by heating, comprising:

- a heating device configured to heat the soil;
- a hermetic zone;
- a vacuum pump configured to pump out the hermetic zone to a vacuum state;
- an introducing device configured to introduce a heated residue of the soil from the heating device to the hermetic zone;
- a purging device configured to purge the hermetic zone by a purge gas which is substantially organic halide-free; and
- a first cooling device configured to cool the heated residue.

Claim 38 (Previously Presented): The soil treatment apparatus as set forth in claim 37,
wherein the heating device is a combustion furnace for performing combustion treatment for the soil.

Claim 39 (Previously Presented): The soil treatment apparatus as set forth in claim 37,
wherein the heating device is a thermal decomposition furnace configured to perform thermal decomposition treatment for the soil.

Claim 40 (Previously Presented): The soil treatment apparatus as set forth in claim 37,

wherein the heating device is a reduced pressure thermal decomposition furnace configured to perform thermal decomposition treatment for the soil under reduced pressure.

Claim 41 (Previously Presented): The soil treatment apparatus as set forth in claim 37,

wherein the purging device introduces the purge gas after the pressure in the hermetic zone is reduced.

Claim 42 (Previously Presented): The soil treatment apparatus as set forth in claim 37,

wherein the organic halides are dioxins.

Claim 43 (Previously Presented): The soil treatment apparatus as set forth in claim 41,

wherein the purge gas contains at least one element selected from a group consisting of helium, neon, argon, krypton, xenon, nitrogen, and hydrogen.

Claim 44 (Previously Presented): The soil treatment apparatus as set forth in claim 37, further comprising:

a trapping device configured to trap halogens having a metal for forming chemical compounds with halogen contained in gases produced by the heating of the soil or an adsorbent configured to adsorb the halogen in the produced gases.

Claim 45 (Previously Presented): The soil treatment apparatus as set forth in claim 37, further comprising:

a reforming device configured to reform gases produced by the heating of the soil at a first temperature at which dioxins are decomposed; and

a second cooling device configured to cool the produced gases to a second temperature so that an increase in the concentration of dioxins in the gases is suppressed.